SEQUENCE LISTING

<110> Hadlaczky, Gyula

<120> ARTIFICIAL CHROMOSOMES, USES THEREOF AND
METHODS FOR PREPARING ARTIFICIAL CHROMOSOMES

<130> 24601-402P

<140> Not yet assigned   .
<141> Herewith

<150> US/09/724,693
<151> 2000-11-28

<150> US/08/835,682
<151> 1997-04-10

<150> US/08/695,191
<151> 1996-08-07

<150> US/08/682,080
<151> 1996-07-15

<150> US/08/629,822
<151> 1996-04-10

<160> 34

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 1260
<212> DNA
<213> Mus musculus

<220>
<221> misc_feature
<222> (1)...(1260)
<223> n = A,T,C or G

<400> 1
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ttcgtcattt tcaagtcctc aagtggatgt ttctcatttn ccatgaattt cagttttctn  180
gccatattcc acgtcctaca gnggacattt ctaaatttnc cacctttttc agttttcctc  240
gccatatttc acgtcctaaa atgtgtattt ctcgtttncc gtgattttca gttttctcgc  300
cagattccag gtcctataat gtgcatttct catttnncac gtttttcagt gatttcgtca  360
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aagtatatat ttctcatttt ccctgatttt cagtttcctt gccatattcc aggtcctaca  1020
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ggatgtttct cattttccat gattttcagt tttcttgcca tataccatgt cctacagtgg  1140
acatttctaa attatccacc ttttcagtt tttcatcggc acatttcacg tcctaaagtg  1200
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<210> 2
<211> 1044
<212> DNA
<213> Homo sapiens

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cgttggaaac gggattgtct tcatataaac cctagacaga agcattctca gaagcttcat 240
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aaaggaaata tcttccaata aaagctagat agaggcaatg tcagaaacct ttttcatgat 420
gtatctactc agctaacaga gttgaacctt cctttgagag agcagttttg aaacactctt 480
tttgtggaat ctgcaagtgg atatttgtct agctttgagg atttcgttgg gaaacgggat 540
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cattcccaga atcttgtttg tgatgtttgc attcaagtca cagagttgaa cattcccttt 960
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<210> 3
<211> 2492
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
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<223> n = A,T,C or G

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tgctatcctg gggttcaacc ccccaggttg aaggccctgg gggagatggt cccaggacat 360
attacaatgg acacaggagg ttgggacacc tggagtcacc aaacaaaacc atgccaagag 420
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gatgattttg agtgattatt tgtgtaagtt gtaaagtttt cgtctatatc catatcattt 1440
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gtctgggaag gctcacctgg aggaccacca aaaattcaca tattagtagc atctctagtg 1620
ctggagtgga tgggcacttg tcaattgtgg gtaggaggga aaagaggtcc tatgcagaaa 1680
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gaaactccct agaactcctc tgaagatgcc ccaatcattc actctgcaat aaaaatgtca 1740
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ccataagtac agattagggc agagaaggac attcaaaaga ggcaggcgca gtaggtacaa 1860
acgtgatcgc tgtcagtgtg cctgggatgg cgggaaggag gctggtgcca gagtggattc 1920
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ggcaagttgg ggagctaagg cagtagcagg aaaaccagac aaagaaaaca ggtggagact 2040
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tcttccaagt taaacaagaa ctgggacatc agctctcccc agtaatagct ccgtttcagt 2280
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<210> 4
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> pS12 forward primer

<400> 4
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ggggaattca ttgggatgtt tcagttga                                       28
```

<210> 5
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> pS12 reverse primer

<400> 5
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cgaaagtccc ccctaggaga tcttaagga                                      29
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<210> 6
<211> 47
<212> DNA
<213> Artificial Sequence

<220>
<223> Anti-HIV-1 ribozyme

<400> 6
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ccgcttaata ctctgatgag tccgtgagga cgaaacgctc tcgcacc                  47
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<210> 7
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Sense oligonucleotide

<400> 7
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cgatttaaat taattaagcc cgggc                                          25
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<210> 8
<211> 27
<212> DNA
<213> Artificial Sequence

<220>

<223> Antisense oligonucleotide

<400> 8
taaatttaat taattcgggc ccgtcga   27

<210> 9
<211> 69
<212> DNA
<213> Artificial Sequence

<220>
<223> IL-2 signal sequence

<221> CDS
<222> (1)...(69)

<400> 9
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atg tac agg atg caa ctc ctg tct tgc att gca cta agt ctt gca ctt    48
Met Tyr Arg Met Gln Leu Leu Ser Cys Ile Ala Leu Ser Leu Ala Leu
 1               5                  10                  15

gtc aca aac agt gca cct act                                         69
Val Thr Asn Ser Ala Pro Thr
                20
```

<210> 10
<211> 945
<212> DNA
<213> Artificial Sequence

<220>
<223> *R. Reinformis* Luciferase

<221> CDS
<222> (1)...(945)

<400> 10
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agc tta aag atg act tcg aaa gtt tat gat cca gaa caa agg aaa cgg    48
Ser Leu Lys Met Thr Ser Lys Val Tyr Asp Pro Glu Gln Arg Lys Arg
 1               5                  10                  15

atg ata act ggt ccg cag tgg tgg gcc aga tgt aaa caa atg aat gtt    96
Met Ile Thr Gly Pro Gln Trp Trp Ala Arg Cys Lys Gln Met Asn Val
                20                  25                  30

ctt gat tca ttt att aat tat tat gat tca gaa aaa cat gca gaa aat    144
Leu Asp Ser Phe Ile Asn Tyr Tyr Asp Ser Glu Lys His Ala Glu Asn
             35                  40                  45

gct gtt att ttt tta cat ggt aac gcg gcc tct tct tat tta tgg cga    192
Ala Val Ile Phe Leu His Gly Asn Ala Ala Ser Ser Tyr Leu Trp Arg
     50                  55                  60

cat gtt gtg cca cat att gag cca gta gcg cgg tgt att ata cca gat    240
His Val Val Pro His Ile Glu Pro Val Ala Arg Cys Ile Ile Pro Asp
 65                  70                  75                  80

ctt att ggt atg ggc aaa tca ggc aaa tct ggt aat ggt tct tat agg    288
Leu Ile Gly Met Gly Lys Ser Gly Lys Ser Gly Asn Gly Ser Tyr Arg
                85                  90                  95

tta ctt gat cat tac aaa tat ctt act gca tgg ttg aac ttc tta att    336
Leu Leu Asp His Tyr Lys Tyr Leu Thr Ala Trp Leu Asn Phe Leu Ile
                100                 105                 110
```

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tac caa aga aga tca ttt ttt gtc ggc cat gat tgg ggt gct tgt ttg    384
Tyr Gln Arg Arg Ser Phe Phe Val Gly·His Asp Trp Gly Ala Cys Leu
        115             120                 125

gca ttt cat tat agc tat gag cat caa gat aag atc aaa gca ata gtt    432
Ala Phe His Tyr Ser Tyr Glu His Gln Asp Lys Ile Lys Ala Ile Val
        130             135                 140

cac gct gaa agt gta gta gat gtg att gaa tca tgg gat gaa tgg cct    480
His Ala Glu Ser Val Val Asp Val Ile Glu Ser Trp Asp Glu Trp Pro
145             150                 155                 160

gat att gaa gaa gat att gcg ttg atc aaa tct gaa gaa gga gaa aaa    528
Asp Ile Glu Glu Asp Ile Ala Leu Ile Lys Ser Glu Glu Gly Glu Lys
                165             170                 175

atg gtt ttg gag aat aac ttc ttc gtg gaa acc atg ttg cca tca aaa    576
Met Val Leu Glu Asn Asn Phe Phe Val Glu Thr Met Leu Pro Ser Lys
            180             185                 190

atc atg aga aag tta gaa cca gaa gaa ttt gca gca tat ctt gaa cca    624
Ile Met Arg Lys Leu Glu Pro Glu Glu Phe Ala Ala Tyr Leu Glu Pro
        195             200                 205

ttc aaa gag aaa ggt gaa gtt cgt cgt cca aca tta tca tgg cct cgt    672
Phe Lys Glu Lys Gly Glu Val Arg Arg Pro Thr Leu Ser Trp Pro Arg
        210             215                 220

gaa atc ccg tta gta aaa ggt ggt aaa cct gac gtt gta caa att gtt    720
Glu Ile Pro Leu Val Lys Gly Gly Lys Pro Asp Val Val Gln Ile Val
225             230                 235                 240

agg aat tat aat gct tat cta cgt gca agt gat gat tta cca aaa atg    768
Arg Asn Tyr Asn Ala Tyr Leu Arg Ala Ser Asp Asp Leu Pro Lys Met
                245             250                 255

ttt att gaa tcg gat cca gga ttc ttt tcc aat gct att gtt gaa ggc    816
Phe Ile Glu Ser Asp Pro Gly Phe Phe Ser Asn Ala Ile Val Glu Gly
            260             265                 270

gcc aag aag ttt cct aat act gaa ttt gtc aaa gta aaa ggt ctt cat    864
Ala Lys Lys Phe Pro Asn Thr Glu Phe Val Lys Val Lys Gly Leu His
        275             280                 285

ttt tcg caa gaa gat gca cct gat gaa atg gga aaa tat atc aaa tcg    912
Phe Ser Gln Glu Asp Ala Pro Asp Glu Met Gly Lys Tyr Ile Lys Ser
        290             295                 300

ttc gtt gag cga gtt ctc aaa aat gaa caa taa                        945
Phe Val Glu Arg Val Leu Lys Asn Glu Gln  *
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<210> 11
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Forward primer

<400> 11
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<210> 12
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Reverse primer

<400> 12
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<210> 13
<211> 1434
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification product

<400> 13
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tgtcgacatt tccactccca atgacggtga tgtataatgc tcaagtattc tcctgctttt 120
ttaccactaa ctaggaactg ggtttggcct taattcagac agccttggct ctgtctggac 180
aggtccagac gactgacacc attaacactt tgtcagcctc agtgactaca gtcatagatg 240
aacaggcctc agctaatgtc aagatacaga gaggtctcat gctggttaat caactcatag 300
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<210> 14
<211> 1400
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification product

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ttaccactaa ctaggaactg ggtttggcct taattcagac agccttggct ctgtctggac 180
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<210> 15
<211> 1369
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification product

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acacattact caaggtgggc tcatctgagc tgcagattca gcttaatatg aatcttgcca 180
attgtgtgaa atcataaatc ttcaaagtga cactcattgc cagacacagg tgcccacctt 240
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atacaaataa atcatggtag ataacagtaa gttgagagct taaatttaat aaagtgatat 360
acctaataaa aattaaatta agaaggtgtg aatatactac agtaggtaaa ttatttcatt 420
aatttatttt ctttcttaat cctttatat gtttctgct attgtcaatt gcacatccat 480
atgttcaatt cttcactgta atgaagaaat gtagtaaata tactttccga acaagttgta 540
tcaaatatgt tacacttgat tccgtgtgtt acttatcatt ttattattat attgattgca 600
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gttccttgga aactcaggat caaattcagg ttgtcaggct tggcagcatg cacttttac 840
cagtgcctcc atcttgctag ccctgaacat caagctttgc agacagacag gctacactaa 900
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tacggatgtt gattttgtgc agttctacta tgataatagt ctagcttcat aaatctgaca 1200
cacttattgg gaatgttttt gttaataaaa gattcaggtg ttactctagg tcaagagaat 1260
attaaacatc agtcccaaat tacaaacttc aataaaagat ttgactctcc agtggtggca 1320
atataaagtg ataatgatta tcatctacat atcacaacgt gcgtggagg              1369
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<210> 16 ·
<211> 22118
<212> DNA
<213> Mus musculus

<300>
<308> Genbank Accession No. X82564
<309> 1996-04-09

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<400> 16
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ctgagtgata ggtcctggga catatgcagt tctgcacaga cagacagaca gacagacaga 180
cagacagaca gacagacgtt acaaacaaac acgttgagcc gtgtgccaac acacacacaa 240
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ggcggccact gtggtccggg agctgctcgg caggcgggtg agccagttgg aggggcgtca 600
tgcccccgcg ggctcccgtg gccgacgcgg cgtgttcttt ggggggggcct gtgcgtgcgg 660
gaaggctgcg cacgttgtcg gtccttgcga gggaaagagg ctttttttttt ttaggggggtc 720
gtccttcgtc gtcccgtcgg cggtggatcc ggcct                          755
```

<210> 20
<211> 463
<212> DNA
<213> Artificial Sequence

<220>
<223> Targeting sequence

<400> 20
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ggccgaggtg cgtctgcggg ttggggctcg tccggccccg tcgtcctccg ggaaggcgtt 60
tagcgggtac cgtcgccgcg ccgaggtggg cgcacgtcgg tgagataacc ccgagcgtgt 120
ttctggttgt tggcggcggg ggctccggtc gatgtcttcc cctccccctc tccccgaggc 180
caggtcagcc tccgcctgtg ggcttcgtcg gccgtctccc ccccctcac gtccctcgcg 240
agcgagcccg tccgttcgac cttccttccg ccttcccccc atctttccgc gctccgttgg 300
ccccgggggtt ttcacggcgc cccccacgct cctccgcctc tccgcccgtg gtttggacgc 360
ctggttccgg tctcccccgcc aaaccccggt tgggttggtc tccggccccg gcttgctctt 420
cgggtctccc aacccccggc cggaagggtt cggggggttcc ggg                 463
```

<210> 21
<211> 378
<212> DNA
<213> Artificial Sequence

<220>
<223> Targeting sequence

<400> 21
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ggattcttca ggattgaaac ccaaaccggt tcagtttcct ttccggctcc ggccggggg 60
ggcggccccg ggcggtttgg tgagttagat aacctcgggc cgatcgcacg cccccgtgg 120
cggcgacgac ccattcgaac gtctgcccta tcaactttcg atggtagtcg atgtgcctac 180
catggtgacc acgggtgacg gggaatcagg gttcgattcc ggagagggag cctgagaaac 240
ggctaccaca tccaaggaag gcagcaggcg cgcaaattac ccactcccga cccggggagg 300
tagtgacgaa aaataacaat acaggactct ttcgaggccc tgtaattgga atgagtccac 360
tttaaatcct ttaagcag                                             378
```

<210> 22
<211> 378
<212> DNA
<213> Artificial Sequence

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```
<220>
<223> Targeting sequence

<400> 22
gatccattgg agggcaagtc tggtgccagc agccgcggta attccagctc caatagcgta 60
tattaaagtt gctgcagtta aaaagctcgt agttggatct tgggagcggg cgggcggtcc 120
gccgcgaggc gagtcaccgc ccgtccccgc cccttgcctc tcggcgcccc ctcgatgctc 180
ttagctgagt tgtcccgcgg ggcccgaagc gtttactttg aaaaaattag agttgtttca 240
aagcaggccc gagccgcctg gataccgcca gctaggaaat aatggaatag gaccgcggtt 300
cctattttgt ttggttttcg gaactgagcc catgattaag ggaaacggcc ggggcattc 360
ccttattgcg ccccccta                                               378

<210> 23
<211> 719
<212> DNA
<213> Artificial Sequence

<220>
<223> Targeting sequence

<400> 23
ggatctttcc cgctccccgt tcctcccggc ccctccaccc gcgcgtctcc cccttctttt 60
tcccctctcc ggaggggggg gaggtggggg cgcgtgggcg gggtcggggg tggggtcggc 120
gggggaccgc ccccggccgg caaaaggccg ccgccgggcg cacttcaacc gtagcggtgc 180
gccgcgaccg gctacgagac ggctgggaag gcccgacggg gaatgtggct cggggggggc 240
ggcgcgtctc agggcgcgcc gaaccacctc accccgagtg ttacagccct ccggccgcgc 300
tttcgcggaa tcccgggggcc gaggggaagc ccgatacccg tcgccgcgct tttcccctcc 360
ccccgtccgc ctcccgggcg ggcgtggggg tggggccgg gccgcccctc ccacgcccgt 420
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tcacgccgcc cccgacgaag ccgagcgcac ggggtcggcg gcgatgtcgg ctacccaccc 600
gaccgtctt gaaacacgga ccaaggagtc taacgcgtgc gcgagtcagg ggctcgcacg 660
aaagccgccg tggcgcaatg aaggtgaagg gccccgtccg ggggcccgag gtgggatcc 719

<210> 24
<211> 685
<212> DNA
<213> Artificial Sequence

<220>
<223> Targeting sequence

<400> 24
cgaggcctct ccagtccgcc gagggcgcac caccggcccg tctcgcccgc cgcgtcgggg 60
aggtggagca cgagcgtacg cgttaggacc cgaaagatgg tgaactatgc ctgggcaggg 120
cgaagccaga ggaaactctg gtggaggtcc gtagcggtcc tgacgtgcaa atcggtcgtc 180
cgacctgggt ataggggcga aagactaatc gaaccatcta gtagctggtt ccctccgaag 240
tttccctcag gatagctggc gctctcgcaa ccttcggaag cagtttttatc cgggtaaagg 300
cggaatggat taggaggtct ggggccgga aacgatctca aactatttct caaactttaa 360
atgggtaagg aagcccggct cgctggcgtg gagccgggcg tggaatgcga gtgcctagtg 420
ggccactttt ggtaagcaga actgcgctg cgggatgaac cgaacgccgg gttaaggcgc 480
ccgatgccga cgctcatcag accccagaaa aggtgttggt tgatatagac agcaggacgg 540
tggccatgga agtcggaatc cgctaaggag tgtgtaacaa ctcacctgcc gaatcaacta 600
gccctgaaaa tggatggcgc tggagcgtcg gcccatacc cggccgtcgc cggcagtcgg 660
aacgggacgg gacgggagcg gccgc                                       685

<210> 25
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification control element forward primer

<400> 25
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gaggaattcc cctatcccta atccagattg gtg   33

<210> 26
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Amplification control element reverse primer

<400> 26
aaactgcagg ccgagccacc tctcttctgt gtttg   35

<210> 27
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Origin of replication forward primer

<400> 27
aggaattcac agaagagagg tggctcggcc tgc   33

<210> 28
<211> 34
<212> DNA
<213> Artificial Sequence

<220>
<223> Origin of replication reverse primer

<400> 28
agcctgcagg aagtcatacc tggggaggtg gccc   34

<210> 29
<211> 80
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 29
aaactgcagg ttaattaacc ctaaccctaa ccctaaccct aaccctaacc ctaaccctaa 60
ccctaaccct aacccgggat   80

<210> 30
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 30
ttgggcccta ggcttaagg   19

<210> 31
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Sequencing primer

<400> 31
gccagggttt tcccagtcac gacgt   25

<210> 32
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> M13 forward primer

<400> 32
gctgcaaggc gattaagttg ggtaac   26

<210> 33
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> M13 reverse primer

<400> 33
tatgttgtgt ggaattgtga gcggat   26

<210> 34
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 34
gggtttaaac agatctctgc a   21